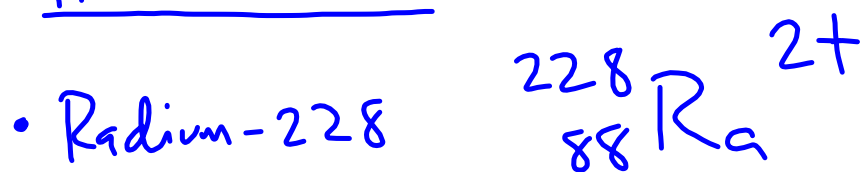
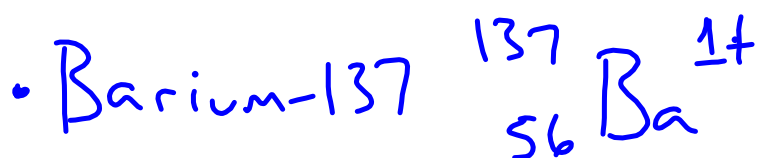


HW Review:

- atomic #: 88
- # protons: 88
- # neutrons: 140
- mass #: 228
- # electrons: 86
- charge:  $2+$

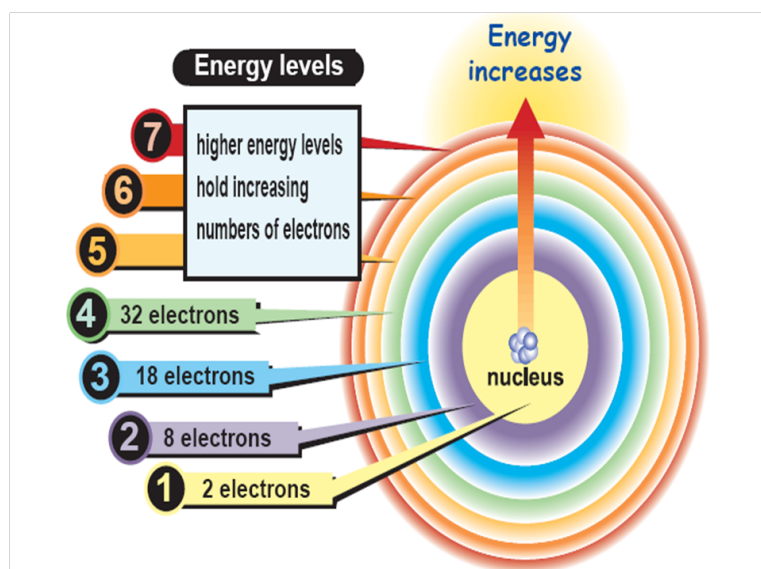


- atomic #: 56
- #  $p^+$ : 56
- #  $n^0$ : 81
- mass #: 137
- #  $e^-$ : 55

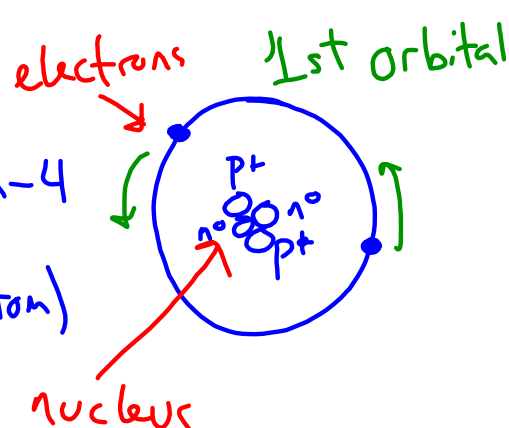
# Electron Arrangement

## • Energy levels

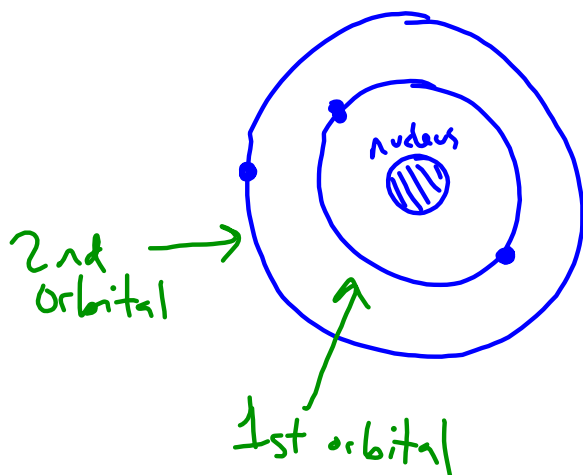
- Close to the nucleus, electrons have low energy
- Far away from the nucleus, electrons have high energy
- Each level has a maximum amount of electrons it can hold

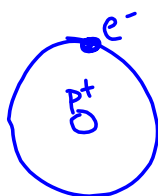


- Rule: Electrons must occupy lowest energy level first

- Bohr Diagrams
    - Model created by/named after Niels Bohr
    - Diagrams show energy levels of the atom
    - Show every electron orbiting the nucleus
    - Example: Helium-4 (neutral atom)
- 

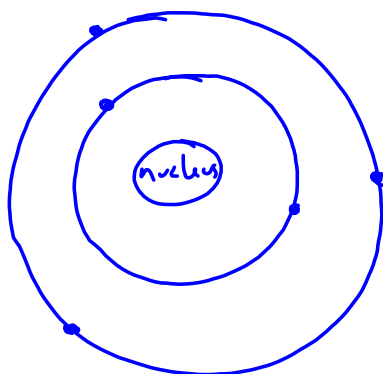
Lithium-6  ${}^6_3\text{Li}$   
(neutral atom)

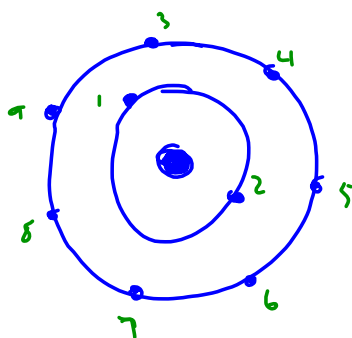


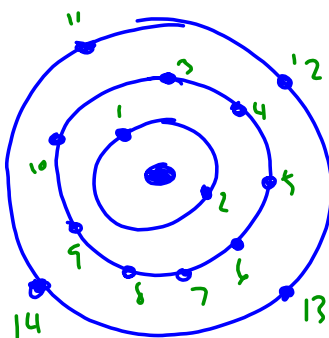
$$\begin{array}{c} 1 \\ 1 \end{array} \text{H} \phi \quad \text{Hydrogen}$$


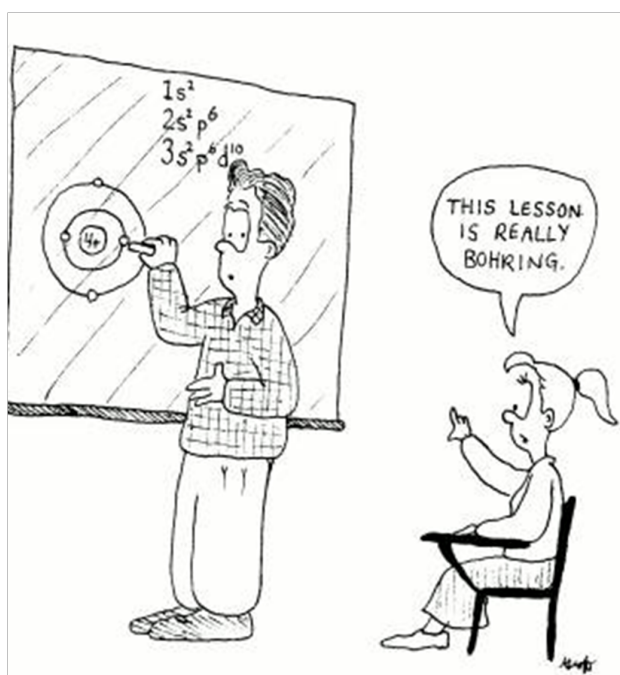
$$\begin{array}{c} 10 \\ 5 \end{array} \text{B} \phi \leftarrow \text{neutral atom: } \#p^+ = \#e^-$$

(Boron)



$$\begin{array}{c} 19 \\ 9 \end{array} \text{F} \phi \quad \text{(Fluorine)}$$


$$\begin{array}{c} 28 \\ 14 \end{array} \text{Si} \phi$$


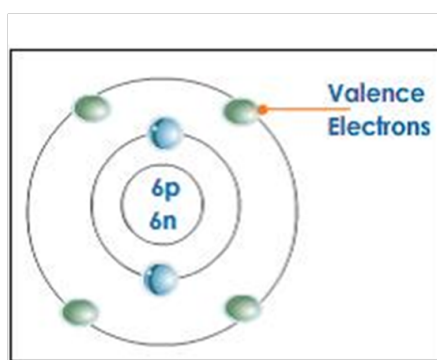


# • Valence Electrons

– Definition: electrons in outermost orbital of atom

\* – Determine the properties of the element

Carbon



(1)	Number of valence electrons in parentheses																(8)
H 1																	He 2
Li 3	Be 4	Transition metals: groups 3-12 (Variable number of valence electrons)										B 5	C 6	N 7	O 8	F 9	Ne 10
Na 11	Mg 12											Al 13	Si 14	P 15	S 16	Cl 17	Ar 18
K 19	Ca 20	Sc 21	Ti 22	V 23	Cr 24	Mn 25	Fe 26	Co 27	Ni 28	Cu 29	Zn 30	Ga 31	Ge 32	As 33	Se 34	Br 35	Kr 36
Rb 37	Sr 38	Y 39	Zr 40	Nb 41	Mo 42	Tc 43	Ru 44	Rh 45	Pd 46	Ag 47	Cd 48	In 49	Sn 50	Sb 51	Te 52	I 53	Xe 54

- Lewis Dot Diagrams
  - Use symbol of the element and dots that represent the valence electrons



- Dots start on right side of symbol
- Go counterclockwise then add second dots

